GP Series

MODULAR STABILISED UNITS

Instruction Manual

Coutant Electronics Ltd.

G.P. SERIES

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Spares and Service

1. A full stock of tested spare parts is held at our Ilfracombe factory for customers who require to repair units themselves.

2. When returning units to our Service department, please ensure they are adequately packed for the journey. The units must also be accompanied by information as to their origin and nature of defect. This information will greatly assist us in giving a speedy turn round, please supply too much information rather than too little.

3. Coutant Electronics Ltd., reserve the right to make design and component changes without notice. Equivalent components may be used in place of those listed.

WARNING

When the mains supply is connected to the mains connector block on a power supply dangerous voltages will be present on some components within the unit.

HEALTH AND SAFETY AT WORK ACT 1974

We have reasonable grounds to believe that we have ensured, so far as is practicable, that our product has been so designed and constructed as to be safe and without risks to health, when properly installed and used in its intended environment by appropriate and trained personnel, and in accordance with our published instructions.

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Tel.: Reading (0734) 55391
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G.P. SERIES

This range of modular stabilised units use the narrow slot technique in that only discrete bands of voltage range are covered. This gives reduced dissipation and reduced size, units can be run in series or parallel.

Specifiation

Output Voltages	5–6v 10–12v 15–18v 20–24v
Output Current	1–10 amps.
Line Regulation	0.01% + 1mV for 10% change
Load Regulation	0.03% + 3mV zero to full load
Ripple	$<$1.5mV pk – pk
Temperature Range	0.–50°c. (75°c. with derating)
Temperature Coefficient	6 volt range 0.03%/°c. 12, 18 & 24 volt range 0.02%/°c.

Transient Response: Recovery within 20 μS to 10mV on application of full load.

Overload Protection: Current trip operates at approx 120% of full load and is re-entrant to approx 30% of full load at short circuit.

Overvoltage Protection: Internally mounted OV Units are available.

Input

Two ranges of input voltage are available 110v. to 115v. or 220v. to 240 volt. Internal tap changes are required to change from one range to the other. The nominal input voltages may be varied to ± 10% without loss of specification or de-rating.

When changing from one range to the other the front panel label must be changed to indicate either 110v.-115v, or 220v.- 240v.

Remote Sensing

Amplifier terminals are provided on all models, and the line drop on remote sensing can be 1 volt max. (½ volt per line). An electrolytic capacitor of 100 μF/amp must be connected across the load to balance the inductance of the leads.

Note

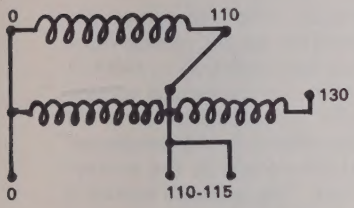
When using long sensing leads it may be necessary to remove the internal output capacitors and connect an equivalent capacitance at the point where the sense and power leads are connected.

Insulation Resistance

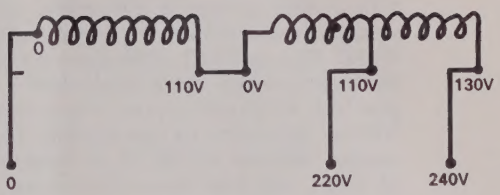
Both rails are isolated from earth and can withstand 500v. d.c. to earth. The unit will withstand 2.1Kv. d.c. between line or neutral and earth.

Tap Changes:

110 – 115



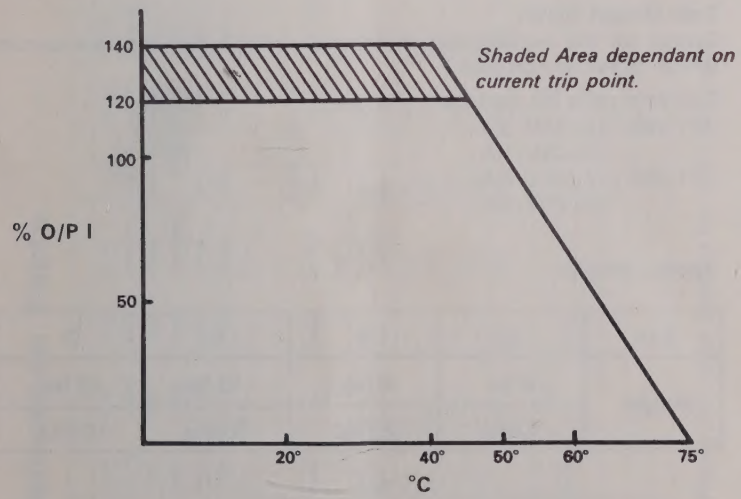
220 or 240



M.T.B.F. (MIL 217A) at 50°C Amb. Full load.

Case	A	B	C	D
	75,000HRS	70,000HRS	64,500HRS	48,000HRS

De-rating:



Circuit Descriptions:

A single smoothed supply, from a transformer and capacitive input filter, gives the bulk power for the output and also the voltage to drive the auxiliary circuits.

VT5 a and b form a differential comparator, which compares the voltage of zener MR4 (5.1v) with a proportion of the output voltage from RV50, R21 and R22. MR5 gives temperature compensation to MR4 in the lowest voltage range when MR4 is 3.3 volts. If the output voltage goes high VT5b will turn on, this turns on VT1. This transistor turns off VT4 by by-passing its base current. The drive current to the compound emitter follower VT50, 51, is removed and the voltage at the emitter of VT51, and thus the output voltage will fall. The opposite occurs if the output voltage falls.

VT2 forms a constant current source since its base voltage is fixed by MR1 and R2, R3, R6, sets the current. This constant current flows either through VT1 collector or VT4 base, and effectively isolates the amplifier from the 100 Hz ripple voltage on C50.

VT3 provides current trip protection and under low output current conditions is turned fully on. As the output current rises the voltage dropped across R50 rises and tends to turn off VT3. As the collector voltage rises MR2 comes into conduction and turns off VT2. This reduces the output voltage. The value at which the trip operates is set by R10 and RV1. The output voltage is set by RV50.

Twin Output Units:

Except for the transformer, these units contain two separate circuits similar to the one on page 7.

Two twin units are available as follows:

GPT 200 12–15V, 2A
12–15V, 2A
GPT 500 12–15V, 5A
12–15V, 5A

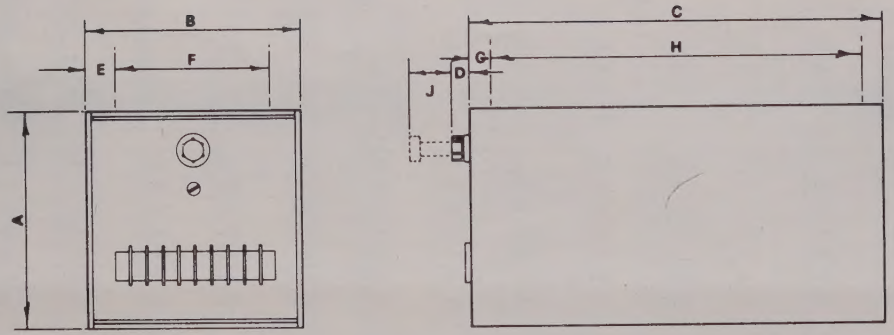
Approx weights:

Size:	A	B	C	D
Weight:	4 lbs	6 lbs	13 lbs	23 lbs
	1.8Kg	2.7Kg	5.8Kg	10.5Kg

GP Reference Table

REF	COMPONENT	UNIT																
		1A 12V	1A 18V	1A 24V	2A 6V	2A 12V	2A 18V	2A 24V	5A 6V	5A 12V	5A 18V	5A 24V	10A 6V	10A 12V	10A 18V	10A 24V	GPT 200	GPT 500
C50	CAPACITOR	2000/30V	1800/50V	1800/50V	4500/25V	6000/30V	4000/50V	4000/50V	10000/25V	15000/25V	9000/50V	9000/50V	2OFF 14000/30V	2OFF 14000/30V	2OFF 10000/40V	2OFF 10000/40V	4700/40V	10000/40V
C51	CAPACITOR	220/35	220/35	220/35	220/35	220/35	220/35	220/35	220/35	470/35	470/35	470/35	470/35	470/35	470/35	470/35		
MR50	DIODE BLOCK	IN4003	IN4003	IN4003	2X IN 5402	2X IN 5402	BR82A	BR82A	PM6A2Q	PM6A2Q	PM7A2Q	PM7A2Q	PM6A2Q	PM6A2Q	MDA990-2	MDA990-2	BR92A	PM7A2Q
MR51	DIODE	IN4003	IN4003	IN4003	IN4003	IN4003	IN4003	IN4003	IN4003	IN4003	IN4003	IN4003	IN5402	IN5402	IN5402	IN5402	IN4003	IN4003
MR52	DIODE	IN4003	IN4003	IN4003	IN4003	IN4003	IN4003	IN4003	IN4003	IN5402	IN5402	IN5402	IN5402	IN5402	IN5402	IN5402	IN4003	IN5402
MR4	DIODE BZY 88	5.1V	5.1V	5.1V	3.3V	5.1V	5.1V	5.1V	3.3V	5.1V	5.1V	5.1V	3.3V	5.1V	5.1V	5.1V	5.1V	5.1V
VT5	TRANSISTOR	ZTX 107																
VT50	TRANSISTOR					2N3055	2N3055		2N3055	2N3055	2N3055	2N3055	2N3055	2N3055	2N3055	2N3055	2N3055	2N3055
VT51	TRANSISTOR	2N3055	2N3055	2N3055	2N3055	2N3055	2N3055	2OFF 2N3055	2OFF 2N3055	2OFF 2N3055	2OFF 2N3055	2OFF 2N3055	4OFF 2N3055	4OFF 2N3055	4OFF 2N3055	4OFF 2N3055	2OFF2N3055	4OFF2N3055
MR5	DIODE				10 D 2				10 D 2				10 D 2					
R1	RESISTOR	910R	1.3K	2.2K	270R	910R	1.3K	2.2K	270R	910R	1.3K	2.2K	330R	910R	1.3K	2.2K	910R	910R
R5	RESISTOR	470K	470K	470K	33K	470K	470K	470K	33K	470K	470K	470K	33K	470K	470K	470K	470K	470K
R14	RESISTOR	3.9K	10K	15K	3.3K	3.9K	10K	15K	3.3K	3.9K	10K	15K	3.3K	3.9K	10K	15K	3.9K	3.9K
R15	RESISTOR	910R	1.8K	3.3K	270R	910R	1.8K	3.3K	270R	910R	1.8K	3.3K	270R	910R	1.8K	3K	910R	910R
R18	RESISTOR	2.2K	2.2K	2.2K	1.3K	2.2K	2.2K	2.2K	1.3K	2.2K	2.2K	2.2K	1.3K	2.2K	2.2K	2.2K	2.2K	2.2K
R21	RESISTOR (TR5)	820R	1.2K	1.3K	470R	820R	1.2K	1.3K	470R	820R	1.2K	1.3K	470R	820R	1.2K	1.3K	820R	820R
R22	RESISTOR (TR5)	1K	750R	560R	1.2K	1K	750R	560R	1.2K	1K	750R	560R	1.2K	1K	750R	560R	1K	1K
CASE SIZE		'A'				'B'				'C'				'D'			C	D
F.S.1	FUSE RATINGS	2 AMP			3 AMP				7 AMP				15 AMP				3 AMP	6.3 AMP
TRANSFORMER OUTPUT		15–0–15	0–21	0–27.5	11–0–11	16–0–16	0–21	0–27.5	11–0–11	15–0–15	0–21	0–27.5	11–0–11	16–0–16	0–21	0–27.5		
R53	RESISTOR	–	–	–	–	–	–	.25R	.25R	.25R	.25R	.25R	.25R	.25R	.25R	.25R		.25R
R51	RESISTOR	–	–	–	–	220R	220R	–	220R	220R	220R	220R	220R	220 R	220R	220R	220R	220R
R50	RESISTOR	0.5R			0.25R				0.1R				2 x 0.1R					
FS2	FUSE RATINGS	1 AMP			1 AMP				3 AMP				5 AMP				2 AMP	5 AMP

NOTE: FS2 Rating should be doubled for 110-115V input.



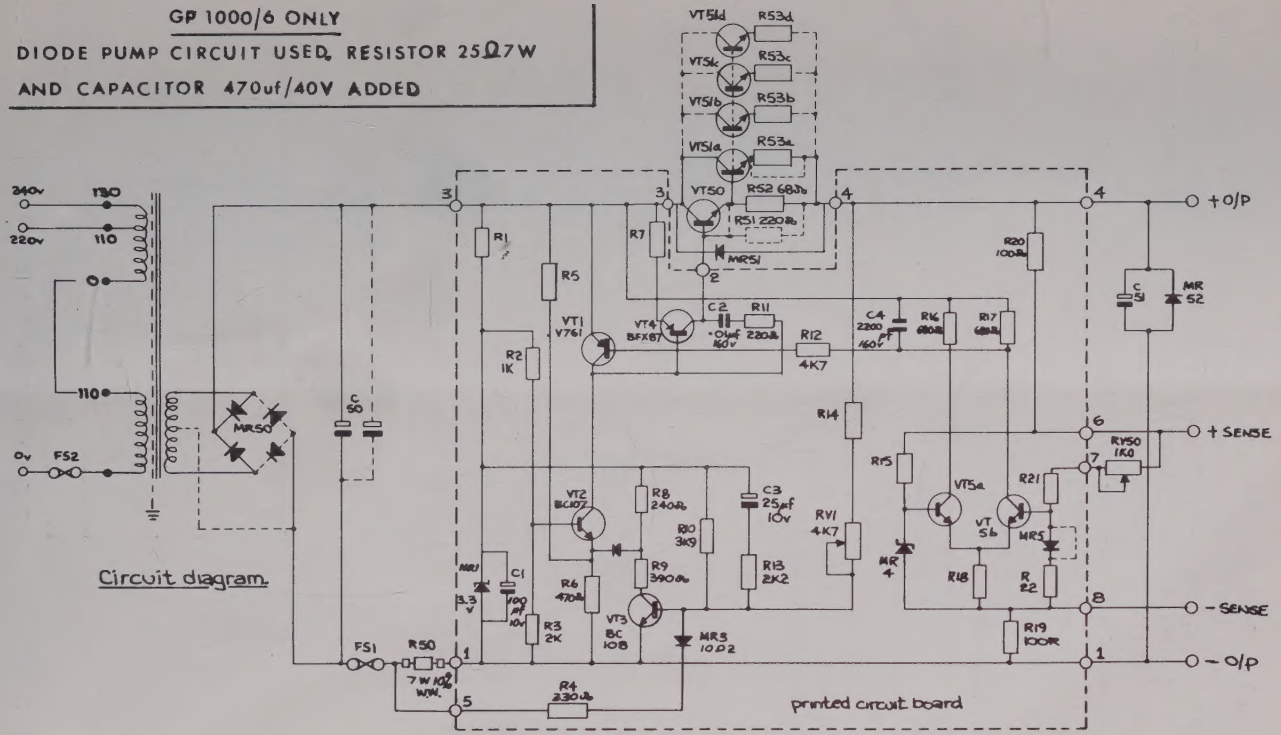
UNIT	OVERALL DIM.				FIXING C'R'S				FUSE REPLACEMENT
SIZE	A	B	C	D	E	F	G	H	J
A	80	80	180	10	15	50	12.5	155	20
B	125	80	180	10	15	50	12.5	155	20
C	125	125	240	17	17.5	90	12.5	215	25
D	125	190	240	17	10	170	12.5	215	25

Note:
Recommended hole size 5.5 mm.
for 4 mm. x 10 mm. screws.
All dimensions in mm.

GP 1000/6 ONLY

DIODE PUMP CIRCUIT USED, RESISTOR 25Ω7W

AND CAPACITOR 470uf/40V ADDED



Circuit diagram.

Optional Overvoltage Protection Units.

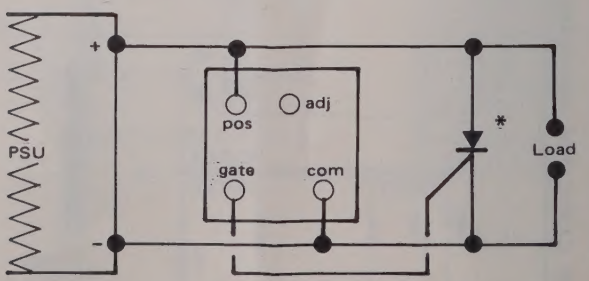
The type KRO range of units is used in the GP range of power supplies. KRO units fitted to the GP200/6, GP500/6 and GP1000/6 are normally set at 6.5v. KRO units fitted to other supplies in the range are set 10% above the output voltage.

To adjust KRO units see table below.

Voltage Setting

Units are internally preset before encapsulation to either 6.5V, 30V or 65V. Any voltage within the range 5 to 65 volts can be set by the addition of one external resistor. For voltage below the preset level, the external resistor is fitted between the positive terminal and the adjust terminal. For voltages above the preset level, the external resistor is fitted between the negative terminal and the adjust terminal. Values as in the table below.

KRO/6.5	V	5	5.5	6	6.5	7	8	9	10	11
	R	3.9K	6.5K	14.7K	–	11.5K	3.8K	2.3K	1.6K	1.3K
KRO/30	V	10	12	15	18	20	22	25	27	35
	R	4.3K	6K	9.5K	14.7K	20K	27.6K	56K	100K	7.5K
KRO/65	V	35	38	40	45	50	54	62	65	
	R	27K	33K	39K	56K	82K	127K	200K	–	



* SCR FITTED ON 10 AMP UNITS ONLY

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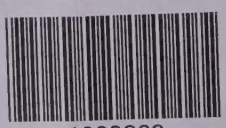

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